SmartSwitch 9000
9T425-16, 9T427-16, and 9T428-16
Local Management Appendix

9032150-04

CABLETRON SYSTEMS

Appendix

9T425-16, 9T427-16, and 9T428-16 Module Specific Information

Introduction

This appendix contains local management information that is specific to the 9T425-16, 9T427-16, and 9T428-16 Token Ring Modules.

- 9T425-16 - 16 ports of UTP/STP RJ45 connections (dual slot)
- 9T427-16 - 16 ports of UTP/STP RJ45 connections (single slot)
- 9T428-16 - 16 ports of multimode fiber optic ST connections

Module Interfaces

The 9T425-16, 9T427-16, and 9T428-16 Token Ring Modules each have 21 system and 17 switch interfaces. Table 1 lists the identifying number, name, and description of each interface.

Table 1. 9T425-16, 9T427-16, and 9T428-16 Token Ring Module Interfaces

System Interface Number	Switch Interface Number	Interface Name	Interface Description
1		SMB-1	1 Mbps System Management Bus
2		SMB-10	10 Mbps System Management Bus
3		HOST	i960 Host
4		CONTROL	i960 Data Controller
5	1	INB	Internal Network Bus
6	2	TOKEN RING 1	Token Ring 1 - Front Panel Port

Table 1. 9T425-16, 9T427-16, and 9T428-16 Token Ring Module Interfaces (Continued)

System Interface Number	Switch Interface Number	Interface Name	Interface Description
7	3	TOKEN RING 2	Token Ring 2 - Front Panel Port
8	4	TOKEN RING 3	Token Ring 3 - Front Panel Port
9	5	TOKEN RING 4	Token Ring 4 - Front Panel Port
10	6	TOKEN RING 5	Token Ring 5 - Front Panel Port
11	7	TOKEN RING 6	Token Ring 6 - Front Panel Port
12	8	TOKEN RING 7	Token Ring 7 - Front Panel Port
13	9	TOKEN RING 8	Token Ring 8 - Front Panel Port
14	10	TOKEN RING 9	Token Ring 9 - Front Panel Port
15	11	TOKEN RING 10	Token Ring 10 - Front Panel Port
16	12	TOKEN RING 11	Token Ring 11 - Front Panel Port
17	13	TOKEN RING 12	Token Ring 12 - Front Panel Port
18	14	TOKEN RING 13	Token Ring 13 - Front Panel Port
19	15	TOKEN RING 14	Token Ring 14 - Front Panel Port
20	16	TOKEN RING 15	Token Ring 15 - Front Panel Port
21	17	TOKEN RING 16	Token Ring 16 - Front Panel Port

Token Ring Specific Configuration Screen

The Token Ring Specific Configuration Screen (Figure 1), allows you to configure each module port.

```
                      SmartSwitch 9000  Local Management

                      Token Ring Specific Configuration

   Module Name: 9T428-16                        Firmware Revision: 01.12.03
   Slot Number: 14                              BOOTPROM Revision: 01.02.00

   Source Route Bridge Number(0-F):  1
   Virtual Ring Number(000-FFF):    CAC   Auto-Detect Ring Number: [ENABLED]

       Locally Admin    Media   Ring    Bridging/  Novell   C-Port   Duplex
Port      Address       Rate    Number  Explorer   Xlate    Mode     Mode

  1  00-00-B8-00-94-58  [ 16M]  001     [SRT/ TP]  [NONE]  [STN/RI]  [AUTO]
  2  00-00-B8-00-94-D8  [ 16M]  002     [ SR/ARE]  [NONE]  [STN/RI]  [AUTO]
  3  00-00-B8-00-94-38  [ 16M]  003     [ TP/ TP]  [ LLC]  [STN/RI]  [AUTO]
  4  00-00-B8-00-94-B8  [ 16M]  004     [ TP/ TP]  [NONE]  [STN/RI]  [AUTO]
  5  00-00-B8-00-94-78  [ 16M]  005     [ TP/ TP]  [ LLC]  [  LOBE]  [AUTO]
  6  00-00-B8-00-94-F8  [ 16M]  006     [ TP/ TP]  [NONE]  [STN/RI]  [AUTO]
  7  00-00-B8-00-94-04  [ 16M]  007     [ TP/ TP]  [NONE]  [STN/RI]  [AUTO]
  8  00-00-B8-00-94-84  [ 16M]  008     [ TP/ TP]  [NONE]  [STN/RI]  [AUTO]

    SAVE     RESET DEFAULTS          [  9-16 ]    EXIT    RETURN
```

Figure 1. Token Ring Specific Configuration Screen

Token Ring Specific Configuration Screen Fields

The following information briefly explains each Token Ring Specific Configuration Screen field.

Source Route Bridge Number (Modifiable)
Displays and sets the Source Route Bridge Number used by the switch module. Valid values are 0 through F (hexadecimal). The **default** is 1.

Virtual Ring Number (Modifiable)
Displays and sets the internal Virtual Ring Number. Valid values are 000 through FFF (hexadecimal). The **default** is CAC.

Auto-Detect Ring Number (Toggle)
Automatically allows the Source Route Ring Numbers to be determined for each port, if a Ring Parameter Server (RPS) is present on the ring segment. Valid choices are ENABLED (**default**) or DISABLED.

Locally Admin Address (Read-only)
Displays the address of the port and also sets the MAC address to either of the following:

- Burned-in address from the PIC (**default**)
  To reset to the Burned-in address, enter 00-00-00-00-00-00.
- User-defined address
  The **range** is 40-00-00-00-00-00 through 40-00-7F-FF-FF-FF (hexadecimal).

Media Rate (Toggle)
Sets the ring speed for the port:

- 4M = 4 Mbps
- 16M = 16 Mbps (**default**)
- AUTO =Automatically determines the appropriate speed (either 4M or 16M)

Ring Number (Modifiable)
The source route ring number used for this port and segment. If "Auto-detect Ring Number" is ENABLED, then this value is automatically updated each time the port is inserted into the ring segment from RPS responses. Valid values are 000 through FFF (hexadecimal). The **default** is equal to the Token Ring port number.

Bridging/Explorer (Toggle)
Defines how the interface forwards a packet via one of the following **Bridge** Methods:

- Source Route (**SR**) - All frames are forwarded on the front panel Token Ring port with a source route RIF. There is no transparent frame support. The Token Ring port may only receive and transmit SR frames in this mode. All TP frames are filtered when they are received by the Token Ring interface.
- Source Route Transparent (**SRT**) - Performs both transparent bridging and source route translational bridging. The Token Ring interface can receive and transmit both SR and TP frames.
- Transparent (**TP**) (**default**) - Allows TP and SR frames to be received/forwarded. The port performs transparent 802.1d bridging. It transmits only TP frames on the ring.

Table 2 lists the **Bridge methods** and the corresponding **Explorer types** for each.

Table 2. Bridge Methods and Explorer Types

Bridge Method	Explorer Type Choices
TP (default)	**TP -** Frames that are destined for an unknown destination address (not in the bridge database) or a broadcast destination address are forwarded out the Token Ring port as transparent (TP) frames. This is the **default**.
SR	**ARE -** Frames that are destined for an unknown destination address (not in the bridge database) or a broadcast destination address are forwarded out the Token Ring port as All Route Explorer (ARE) frames. **STE -** Frames that are destined for an unknown destination address (not in the bridge database) or a broadcast destination address are forwarded out the Token Ring port as Spanning Tree Explorer (STE) frames.
SRT	The ARE, STE, and TP Explorer Type choices apply only to unknown Destination Address (DA) and Broadcast frames that are sourced from NON-Token Ring INB modules (see definitions above). For unknown DA and Broadcast frames that are sourced from a Token Ring module, these frames will be transmitted on the front panel Token Ring port just as they were originally transmitted from the source station. In other words, if a frame is sent as an STE frame, it will be forwarded as an STE frame out the Token Ring port.

Novell Xlate (Toggle)
Allows Token Ring Netware IPX clients or servers operating in their default MSB mode to communicate with FDDI or Ethernet client and servers (which operate only in LSB mode). When enabled for LLC, the module will convert MAC addresses for each Novell Netware frame from MSB to LSB format as each frame is forwarded. The DLC option provides the best translation, but is limited to support only transparent (NON-source routed) IPX frames. This option is available on the Token Ring Specific Configuration LM screen and **defaults** to NONE. If left set to NONE, TR devices must be configured to operate in LSB mode in order to communicate with FDDI, Fast Ethernet, or Ethernet nodes. Valid choices are:

- NONE (**default**) - No translation performed for Novell IPX/SPX packets. TR devices must be configured for LSB operation.
- DLC - Translation performed within the data link control layer for Novell IPX/SPX packets. This selection is valid for ports configured with the Bridge Method set to TP or SRT only. Only the 9T427-16 supports this for SR mode.
- LLC - Translation performed within the Logical Link Control layer for Novell IPX/SPX packets (provides MSB-to-LSB MAC address conversion).

C-Port Mode (Toggle) - 9T425-16 & 9T427-16
Configures the port to one of the following choices:

- AUTO (**default**) - Automatically determines the correct port mode (either LOBE or STN).
- LOBE - Allows direct-attach station connections (acting as a concentrator port).
- STN - Provides station emulation and sources phantom drive.

C-Port Mode (Toggle) - 9T428-16 Only
Configures the port to one of the following choices:

- STN/RI (**default**) - Provides station emulation and sources fiber optic key. Also provides Ring In port; compatible to attach with 802.5 Ring Out ports.
- LOBE - Allows direct-attach fiber optic station connections or stations converted by TRFOT-2
- TPIM - Allows for connection to Cabletron fiber optic RI/RO ports using TPIM-F2, TRFOT-2 (in RI/RO application), or TDRMIM configured for Cabletron (ctron) fiber optic keying.

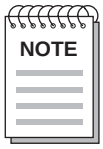
Duplex Mode (Toggle)
Configures the port to one of the following choices:

- AUTO (**default**) -Configures the port to automatically determine at insertion time whether to operate in Full (TXI) or Half (TKP) Duplex mode.
- FULL - Configures the port to only operate with a device that supports Full Duplex (TXI) mode. Classic TR devices that only support Half Duplex (TKP) mode will not connect to the port.
- HALF - Configures the port to only operate with a device that operates in Half Duplex (TKP) mode. DTR (TXI capable) devices will be denied the ability to use Full Duplex (TXI) mode.

Displaying Information About Ports 9 Through 16

To display information about ports 9 through 16:

1. Use the arrow keys to highlight **[9-16]**.
2. Press the **Enter** key.



If you have made any configuration changes, save them before displaying information about other ports. If you display information about other ports and do not save new configuration information, that information will be lost.

Restoring Default Parameters

To restore the default parameters, use the arrow keys to highlight **RESET DEFAULTS,** then press the **Enter** key.

Token Ring Specific Statistics

The Token Ring Specific Statistics Screen (Figure 2), displays information and statistics for a specific port. Access this screen through the Module Specific Statistics Menu.

```
                    SmartSwitch 9000  Local Management

                      Token Ring Specific Statistics

Module Name: 9T425-16                       Firmware Revision: 01.12.03
Slot Number: 14                             BOOTPROM Revision: 01.02.00
                            Port# 1

           LLC BYTES: 3931653411        FORWARDING STATUS: ENABLED
          LLC FRAMES: 0011187286           OPERATION MODE: Std. TR (TKP)
          MAC FRAMES: 0000599030              C-PORT MODE: STN
  SOFT ERROR REPORTS: 0000000001               RING STATE: NORMAL
   RING PURGE EVENTS: 0000000000               RING SPEED: 16 Mb/s
       BEACON EVENTS: 0000000001              RING NUMBER: 001
          RECOVERIES: 0000000000   ACTIVE MONITOR ADDRESS: 00-00-B8-68-71-9E
    LOBE WIRE FAULTS: 0000000000   ACTIVE MONITOR CHANGES: 0000000000
                                           STATIONS ACTIVE: 0000000002




     Port#: [ 1]      RING ERRORS   RESET COUNTERS     EXIT     RETURN
```

Figure 2. Token Ring Specific Statistics Screen

Token Ring Specific Statistics Screen Fields

The following information briefly explains each Token Ring Specific Statistics Screen field.

LLC BYTES (Read-only)
Displays the number of bytes transmitted and received on the token ring.

LLC FRAMES (Read-only)
Displays the number of frames transmitted and received on the token ring.

MAC FRAMES (Read-only)
Displays the number of MAC frames transmitted and received on the token ring.

SOFT ERROR REPORTS (Read-only)
Displays the number of soft error report MAC frames sent to the REM functional address.

RING PURGE EVENTS (Read-only)
Displays the number of times that an Active Monitor on the token ring generated a ring purge MAC frame to clear ring problems.

BEACON EVENTS (Read-only)
Displays the number of times that a beacon condition occurred on the token ring.

RECOVERIES (Read-only)
Displays the number of times the ring recovered from a hard error (beaconing) condition.

LOBE WIRE FAULTS (Read-only)
Displays the number of times the lobe cable connection failed.

FORWARDING STATUS (Read-only)
- ENABLED - The port is enabled to forward frames.
- DISABLED - The port is disabled and blocking all frames.

OPERATION MODE (Read-only)
- Std TR (TKP) - Standard Token Ring, token passing mode.
- Full Duplex (TXI) - Full Duplex, transmit immediate mode.

C-PORT MODE (9T425-16 & 9T427-16) (Read-only)
Displays one of the following choices:

- LOBE - The port is operating as a lobe (acting as a concentrator port).
- STN - The port is operating as a station device, and source of phantom drive.

C-PORT MODE (9T428-16) (Read-only)
Displays one of the following choices:

- STN/RI - The port is operating as a station device or an 802.5-compatible Ring In port.
- LOBE - The port is operating as a lobe port.
- TPIM - The port is operating as a Cabletron fiber optic RI/RO port, compatible with TPIM-F2, TRFOT-2 (in RI/RO application), or TDRMIM configured for Cabletron fiber optic keying.

RING STATE (Read-only)
Displays the current condition of the token ring. Valid conditions include:

- Beaconing
- Closed
- Contention
- Normal
- Purge
- Unknown

RING SPEED (Read-only)
Displays the token ring's operating speed (either 4 Mbps or 16 Mbps).

RING NUMBER (Read-only)
Identifies the source route ring number assigned to this ring.

ACTIVE MONITOR ADDRESS (Read-only)
Displays the MAC Address of the station that currently is designated as the Active Monitor.

ACTIVE MONITOR CHANGES (Read-only)
Displays the number of times that the Active Monitor has changed from one station to another since the module was powered up.

STATIONS ACTIVE (Read-only)
Displays the number of active stations on this token ring segment.

Displaying Statistics for Another Port

To display statistics for another port:

1. Use the arrow keys to highlight the **Port#: [xx]** field at the bottom left of the screen.
2. Press the **Space Bar** to increment (press the **Backspace** key to decrement) the port number to the desired port.
3. Press the **Enter** key.

Displaying Ring Errors

To display ring errors for a specific port, use the arrow keys to highlight the **RING ERRORS** field at the bottom of the screen, then press the **Enter** key. This will display the Token Ring Error Statistics Screen.

Token Ring Error Statistics

The Token Ring Error Statistics Screen (Figure 3), displays error statistics for a specific port.

```
                    SmartSwitch 9000  Local Management

                        Token Ring Error Statistics

  Module Name: 9T425-16                      Firmware Revision: 01.12.03
  Slot Number: 14                            BOOTPROM Revision: 01.02.00

                             Port# 01

        ISOLATING ERRORS                      NON-ISOLATING ERRORS

         LINE ERRORS: 0000000000               LOST FRAME ERRORS: 000000000
        BURST ERRORS: 0000000000            FRAME COPIED ERRORS: 000000000
ABORT TRANSMIT ERRORS: 0000000000      RECEIVER CONGESTION ERRORS: 000000000
           AC ERRORS: 0000000000                  TOKEN ERRORS: 000000000
      INTERNAL ERRORS: 0000000000              FREQUENCY ERRORS: 000000000




   Port#: [1]                          EXIT                          RETURN
```

Figure 3. Token Ring Error Statistics Screen

Token Ring Error Statistics Screen Fields

The following information briefly explains each Token Ring Error Statistics Screen field.

ISOLATING ERRORS

LINE ERRORS (Read-only)
Displays the number of corrupt frames that have been detected by a station on the token ring.

BURST ERRORS (Read-only)
Displays the number of times a signal is not received by a station on the token ring.

ABORT TRANSMIT ERRORS (Read-only)
Displays the number of times that a station transmits an abort delimiter while transmitting.

AC ERRORS (Read-only)
Displays the number of times that two successive AMP or SMP frames are received with A and C bits set at zero.

INTERNAL ERRORS (Read-only)
Displays the number of times that a station encounters a recoverable internal error. This information helps to detect a station in marginal operating condition.

NON-ISOLATING ERRORS

LOST FRAME ERRORS (Read-only)
Displays the number of times that a station fails to receive the end of the frame it transmitted while the interface is in transmit (stripping) mode.

FRAME COPIED ERRORS (Read-only)
Displays the number of times that a node has received a frame with its address as the Destination Address and the Address Recognized bit already set to ‘1’.

RECEIVER CONGESTION ERRORS (Read-only)
Displays the number of times that a station on the token ring recognizes its address, but it cannot copy the frame because its buffer is full.

TOKEN ERRORS (Read-only)
Displays the number of times that the active monitor has detected an error in the token passing protocol due to continuously busy token or not receiving a token within a 10ms window.

FREQUENCY ERRORS (Read-only)
Displays the number of times that the frequency of an incoming signal differs by more than 0.6% from the local oscillator.

Displaying Error Statistics for Another Port

To display error statistics for another port:

1. Use the arrow keys to highlight the **Port#: [xx]** field at the bottom left of the screen.
2. Press the **Space Bar** to increment (press the **Backspace** key to decrement) the port number to the desired port.
3. Press the **Enter** key.

Returning to the Token Ring Specific Statistics Screen

To return to the Token Ring Specific Statistics Screen, press the **Enter** key.